Go To Table Of Contents

114 -001

Ritter® by MIDMARK

Power Podiatry Chair

Service and Parts Manual

Serial Number Prefix: L

This manual applies to units with Serial Numbers prior to 37420

FOR USE BY MIDMARK TRAINED TECHNICIANS ONLY

SF-1545

Part No. 003-0167-00 Rev. H (1/01/04)

Go To Table Of Contents

TABLE OF CONTENTS

Subject	Page
SERVICE	
Introduction	2
Headlock Adjustment	2
Removal & Replacement of Upholstery Sections	3
Procedure For Removing & Exchanging Table Panels	4
Power System Operation	5
Power System Repair Procedures..	5
Power System Specifications	6
Motor Cover & Base Shroud Removal	6
Procedure for Replacing Back Raising Cylinder	7
Procedure for Replacing Tilt Cylinder	9
Procedure for Replacing Foot Raising Cylinder	9
Procedure #1 for Replacing Base Cylinder	10
Procedure #2 for Replacing Base Cylinder..	13
Repair of Oil Leaks..	14
Procedure for Adding Oil to Hydraulic System	14
Lift & Stabilizing Chain Adjustment	15
Procedure for Adjustment or Replacement of Foot Control Switches	15
Procedure for Replacing Motor Capacitor	16
Removal of Down Solenoid	16
Removal of Anticavitation Solenoid	16
Power System Parts Identification..	17
Repair Parts List..	17
Trouble Shooting Guide..	18
111 & 114 Wiring Diagram..	22
Hydraulic Flow Chart..	23
114 Repair Parts List	25

Copyright By Midmark Corporation — 1978

INTRODUCTION

Nothing herein shall be construed as a warranty or guarantee regarding the equipment, its operation or its suitability for any particular purpose. Express and implied warranties are herewith disclaimed by the manufacturer. The equipment has been designed in such manner as to permit service and repair by dealer service personnel. However service and repairs shall be at the dealer's risk. In the event the dealer or his service personnel do not understand the instructions given or the nature of a malfunction experienced, a company salesman or a company service representative should be contacted.

CAUTION: TO INSURE SAFER SERVICE AND MAINTENANCE OF THIS EQUIPMENT:

1) **Read this manual before servicing the equipment.**
2) **Be sure that you understand the instructions contained in this manual before attempting to service or repair the equipment.**
3) **Keep hands and fingers and all other parts of the body away and free from moving parts.**

NOTE: The Model 111 and 114 are identical in operation. All subjects covered pertain to both models unless otherwise specified. For the purpose of this manual, the word **table** is synonymous with the word **chair.**

Headlock Adjustment: (111 Only) To adjust the holding action of the headlock, release the lock handle and loosen the lock screw Item A, Fig. 1, using a 3/32" allen wrench. With a 3/16" allen wrench or a 1/2" wrench, tighten the adjusting screw, Item B, Fig. 1, to obtain the greatest possible holding power without making the handle operation too difficult. Then with the handle in locked position, tighten the lock screw.

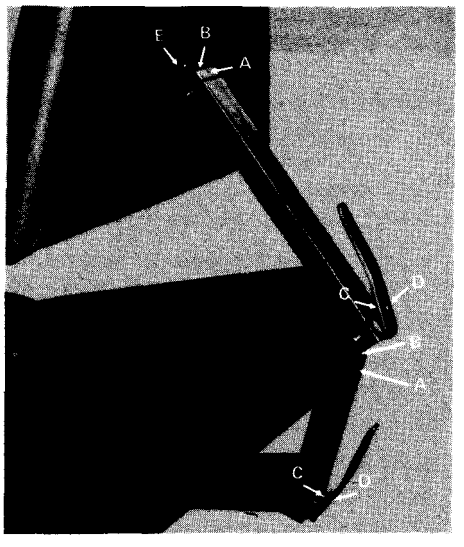


Fig. 1

NOTE: Light oil on the pivot points of the handle will help to a great degree the ease of operation of the handle.

In some rare cases, it may be necessary to adjust the handle stop to insure good holding power with ease of handle operation or to prevent the handle from springing loose under shock loads.

For proper action the handle stop must be adjusted so that when the handle is pushed down for locking action, the handle reaches a point where it wants to lock itself by suddenly going over center. The proper position of the stop is just a fraction over center. The stop is adjusted by loosening the lock nut Item C, Fig. 1 and turning the set screw stop Item D, Fig. 1 with a 1/8" allen wrench. After adjustment, lock the stop screw with the lock nut.

Headlock Adjustment: (114 Only) To adjust the holding action of the headlock, release the lock handle and loosen the lock screw Item A, Fig. 2 using a 3/32" allen wrench. With a 3/16" allen wrench, tighten the adjusting screw Item B, Fig. 2 to obtain the greatest possible holding power without making the handle operation too difficult. Then with the handle in the locked position, tighten the lock screw.

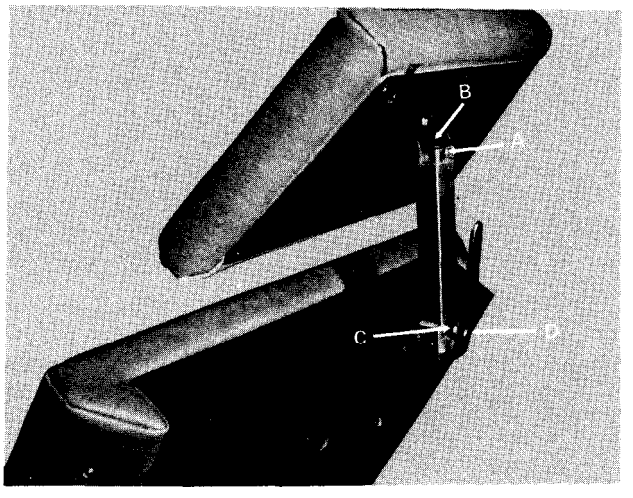


Fig. 2

NOTE: Light oil on the pivot points of the handle will help to a great degree the ease of operation of the handle.

In some rare cases, it may be necessary to adjust the handle stop to insure good holding power with ease of handle operation or to prevent the handle from springing loose under shock loads.

For proper action the handle stop must be adjusted so that when the handle is pushed down for locking action, the handle reaches a point where it wants to lock itself by suddenly going over center. The proper position of the stop is just a fraction over center. The stop is adjusted by loosening the lock nut Item C, Fig. 2 and turning the set screw stop Item D, Fig. 2 with a 1/8" allen wrench. After adjustment, lock the stop screw with the lock nut.

REMOVAL AND REPLACEMENT OF UPHOLSTERED SECTIONS

Removal of Headrest Upholstery Section

1) Remove the (4) screws which mount the headrest to the brackets of the headlock. (Item E, Fig. 1).

Replacement of Headrest Upholstery Section

1) Install the (4) #10-24 x 5/8" screws through the metal brackets of the headlock and into the headrest. Tighten screws semi tight.

2) Align headrest square with back section and tighten screws securely.

Removal of Seat & Back Upholstery Section

1) Remove the metal panel from the metal back frame by removing (4) small screws. (Item A, Fig. 3).

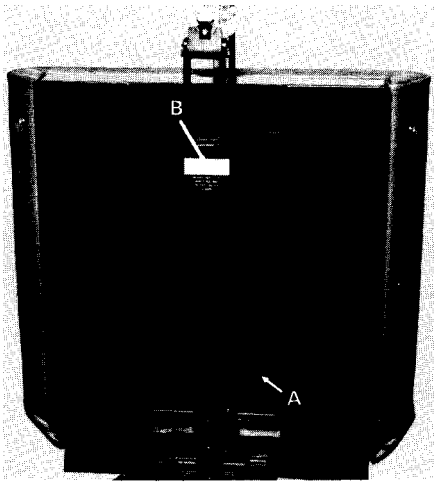


Fig. 3

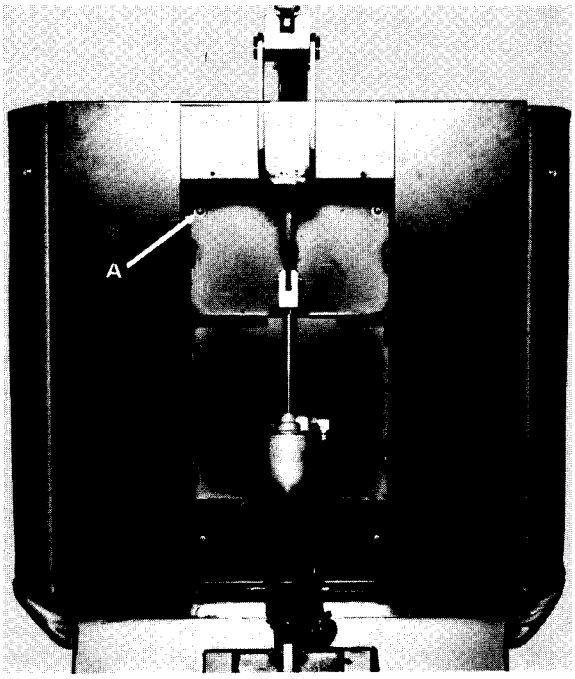


Fig. 4

2) Remove the (4) screws located inside the recessed area of the metal back frame. (Item A, Fig. 4).

3) Remove the (2) screws located at the front edge of the seat section. (Item A, Fig. 5) It is easiest to do this with the leg extension raised up.

4) Remove the (2) screws located under the seat section, near the hinge, by inserting a screwdriver through access hole, Item B, Fig. 5.

5) On the 114 Only, remove the (4) wood screws located under the front outer edge of the seat section. Item A, Fig. 6.

6) With an assistant, lift the entire seat and back section.

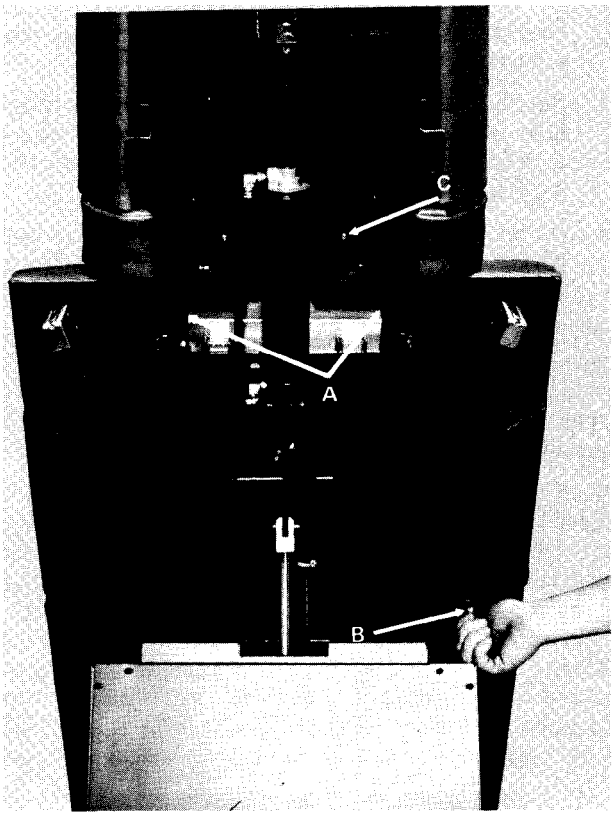


Fig. 5

Replacement of Seat and Back Upholstery Section

1) With an assistant, place the seat and back upholstery section on the metal frame.

2) Align front holes under seat section, Item A, Fig. 5 and install (2) 10-24 x 5/8" screws. It is easiest to do this with leg extension raised up.

3) With a magnetic screwdriver, install (2) 10-24 x 5/8" screws through the access holes. Item B, Fig. 5.

4) Align holes on back section and install (4) 10-24 x 5/8" screws. Item A, Fig. 4.

5) On the 114 Only, install (4) wood screws under outer front edge of seat section, Item A, Fig. 6.

Removal of Legrest Upholstered Section (111 Only)

1) Raise foot extension up, remove 2 #10-24 x 1-3/4" screws under the legrest frame, Item C, Fig. 5.

2) Lift off upholstered legrest.

Replacement of Legrest Upholstered Section (111 Only)

1) With legrest extension raised up, place legrest upholstered section on the legrest frame.

2) Align holes and install (2) #10-24 x 1-3/4" screws under the legrest frame, Item C, Fig. 5.

Removal of Footrest Upholstered Section (114 Only)

1) Remove screw Item B, Fig. 6 from lateral locking mechanism to expose (4) mounting screws.

2) Remove (4) mounting screws from each side of frame, Item C, Fig. 6.

3) Pull upholstered section to its full extended position and lift.

4) Remove (4) 10-24 x 5/8" screws from upholstered foot section.

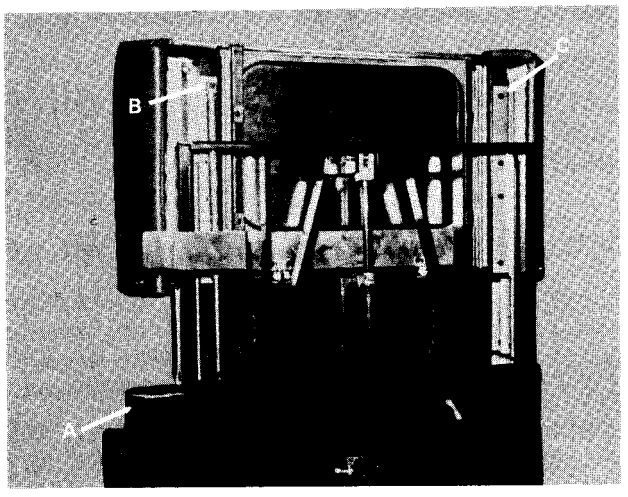


Fig. 6

Replacement of the Footrest Upholstered Section (114 Only)

1) Place footrest upholstered section on frame and align holes and install (4) 10-24 x 5/8" screws in footrest upholstered section.

2) Install (4) mounting screws on each side of frame, Item C, Fig. 6.

3) Install screw, Item B, Fig. 6 in lateral locking mechanism.

PROCEDURE FOR REMOVING AND EXCHANGING TABLE PANELS

1) Raise table to highest position.

2) Remove motor cover, rear outer shroud (motor end) and front outer shroud (foot end). See Shroud Removal Page 6.

3) **CAUTION:** Be sure power cord is disconnected from wall outlet. Remove receptacle leads from terminal board near the motor (See Wiring Diagram, Page 22).

4) Loosen wire clamp, Item A, Fig. 7 and remove wire from clamp.

Fig. 7

5) Remove the panel shroud by removing the (3) screws located on the bottom flange. (Item B, Fig. 7).

Removal of Panels from Shroud:

6) Remove wire raceway by removing (6) screws, Item D, Fig. 7.

7) Remove receptacle cover by removing cover screw, Item A, Fig. 8, and screw on back side of panel, Item C, Fig. 7.

8) Remove receptacle housing by removing (4) screws, Item A, Fig. 9.

9) Remove (4) panel mounting screws, Item E, Fig. 7.

10) Replace new panel onto metal shroud by reversing procedures 6, 7, 8, and 9.

11) Replace the panel shroud to the table base using (3) #10-3/8" screws.

12) Insert wires through wire clamp and tighten.

13) Attach receptacle leads to terminal board near the motor. (See Wiring Diagram, Page 22).

14) Replace outer., shroud (motor end) plastic motor cover, and outer shroud (foot end).

NOTE: When replacing motor cover, be sure power cord fits into slot and be sure all wires are inside cover.

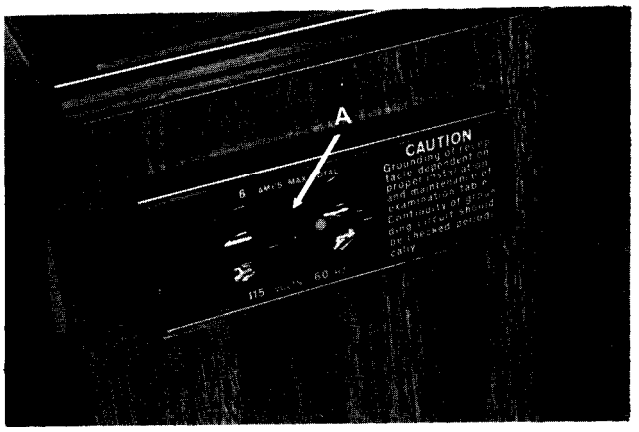


Fig. 8

Fig. 9

MAINTENANCE AND SERVICE OF POWER SYSTEM

POWER SYSTEM OPERATION

The power system consists of three basic sub assemblies:

1. An electric motor coupled to a hydraulic pump with a reversing solenoid valve and attached oil reservoir.
2. Four hydraulic cylinders with built-in electric solenoid valves.
3. **A** foot control footswitch assembly.

When the control switch, either Table Up, Back Up, Tilt Up or Foot Up is depressed, it opens a solenoid valve in the cylinder and simultaneously energizes the motor which pumps oil from the reservoir into the bottom of the respective cylinder. This extends the pistons of the cylinder to the desired length. When the control switch is released, the motor stops and the solenoid valve closes automatically locking the cylinder piston in that position. When the control switch, either Table Down, Back Down, Tilt Down, or Foot Down is depressed, the solenoid valve is again opened and simultaneously the motor and a reversing solenoid valve energizes. Oil is then pumped from the reservoir into the top of the cylinder and retracts the piston to desired length.

The solenoid valves are built into the cylinders, eliminating the high pressure condition in the hoses when the motor is not running. This feature reduces the number of components subjected to high pressure and greatly minimizes the possibility of leaks or loss of hydraulic fluid in case of damage to the lines.

NOTE: See Page 23 for Hydraulic Flow Diagram.

POWER SYSTEM MAINTENANCE

The motor, pump, and reservoir are enclosed in a sounddeadened plastic housing which is located on the base plate. All moving parts, with the exception of the motor, operate in oil within a sealed system. Little routine maintenance is required other than a periodic inspection of hose lines and electrical cords to make sure they are free of cuts or damage and clear of moving parts.

CAUTION: FAILURE TO DO THIS COULD RESULT IN ELECTRICAL SHOCK OR LEAKAGE OF HYDRAULIC OIL.

POWER SYSTEM REPAIR PROCEDURES

The Model 111 & 114 examination tables have been designed so that all mechanical components can easily be repaired and/or replaced in the field if they should become defective for any reason.

If a part replacement should be required, the part should be ordered direct from the Midmark factory. When any part is ordered, a complete description or part number of the part required, along with Serial Number and date of installation of the table, must be supplied. For details of the exchange plan, write the plant. (For location of serial number plate, See Item B, 'Fig. 3.)

Experience has shown that most service problems are due to minor troubles in the electrical circuits or control switches. Therefore, when testing inoperative units, always test switches and electrical wiring first. **CAUTION:** Do not attempt electrical continuity checks or any wiring tests with the table plugged into the wall outlet.
A defective switch, damaged cords, loose wall plug, or a blown fuse in the building circuit could be at fault.

POWER SYSTEM SPECIFICATIONS

Motor: General Electric, 1/2 Horsepower, Intermittant Duty, Capacitor Start & Run, 1500 R.P.M., 667 Watts, 5.8 Amps, 115 V.A.C. 60/50 HZ.

Capacitor: 64-77 M.F.D., 330 V.A.C.

Pump Output: 3/4 G.P.M. at 1500 R.P.M.

Internal Relief Valve: Set at 550-600 P.S.I. for cylinder extension.

External Relief Valve: Set at 200-220 P.S.I. for cylinder retraction.

External Flow Controls: Variable flow for cylinder retraction and extension.

Reservoir Fluid Capacity: 1-1/4 Pts. (2-1/2 Cups)

Total System Fluid Capacity: 4 Pts. including hoses, cylinders and reservoir.

Minimum Fluid Required: 1/4 Pt. required in reservoir with all cylinders retracted to maintain operation.

Hydraulic Fluid: **LIGHT GRADE** mineral oil.

Down Solenoid: .16 Amp, 18 Watt, 115 V.A.C. 50/60 Cycles

Anticavitation Solenoid: 600 P.S.I. Holding Pressure .14 Amp, 12 Watt, 120 V.A.C. 50/60 Cycles.

Relay: 25 Amp Rating .4 Amp Current Draw, 16 Watt, 120 V.A.C. 50/60 Cycles.

Micro Switch: 10 Amp Rating

Hose Rating: 2400 P.S.I. Burst600 P.S.I. Working Pressure

Cylinder Rating: 800-1000 P.S.I. Burst Pressure, 600 P.S.I. Working Pressure, .38 Amp, 115 V.A.C. 50/60 Cycles.

Time Delay Relay: 1 Amp. Rating 3 Watt, 115 V.A.C. 50/60 Cycles.

MOTOR COVER AND BASE SHROUD REMOVAL

MOTOR COVER

Remove motor cover by removing (6) screws, Item A, Fig. 10 and pulling bottom of cover out until top of cover disengages from retaining channel. **NOTE:** When replacing motor cover be sure all wires are inside of cover.

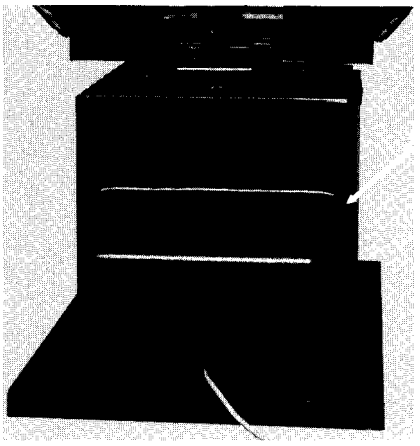


Fig. 10

Rear Outer Shroud
(Motor End)

Remove rear outer shroud by removing (4) small screws, (Item A, Fig. 11).

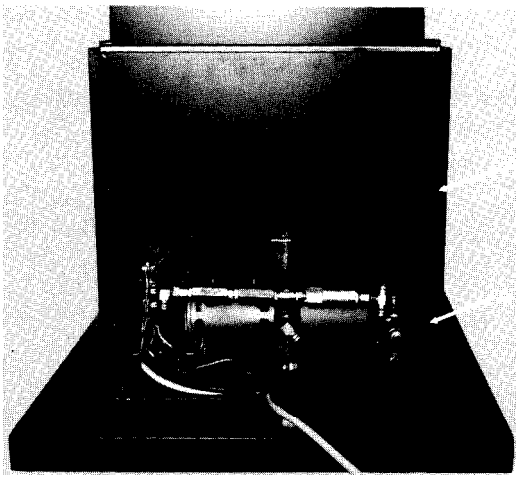


Fig. 11

Rear Inner Shroud
(Motor End)

Remove rear inner shroud by removing (8) small screws, (Item A, Fig. 12).

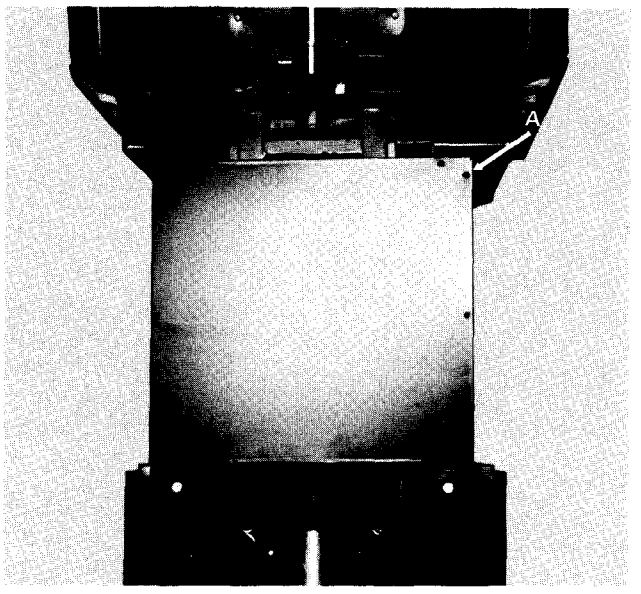


Fig. 12

Front Outer Shroud
(Stirrup End)

Remove front outer shroud by removing (6) small screws, (Item A, Fig. 13).

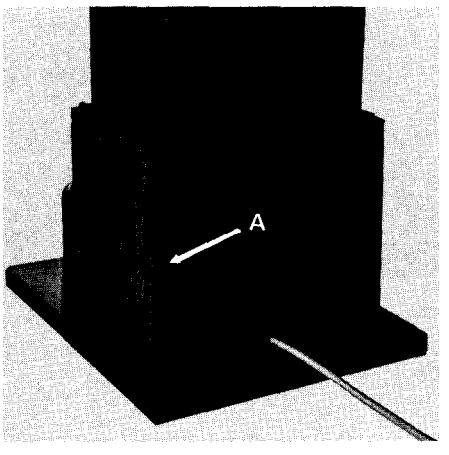


Fig. 13

Front Inner Shroud
(Stirrup End)

Remove front inner shroud by removing (8) small screws, (Item A, Fig. 14).

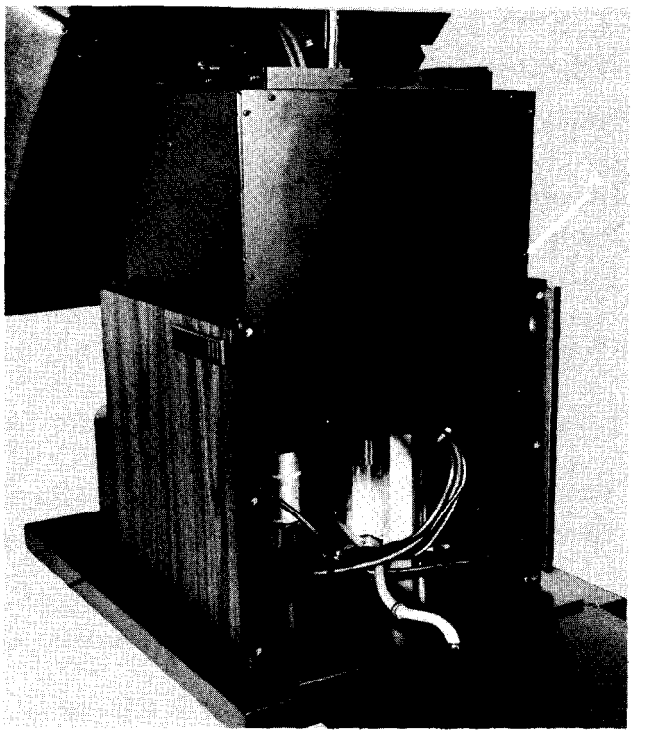


Fig. 14

Procedure for Replacing Back Raising Cylinder

1) When changing a cylinder, notice how the wires, hose fittings and nylon ties are positioned so they may be replaced exactly the same way or damage to the wires and hoses may result in electrical shock or hose leakage. See Figs. 15 & 16.

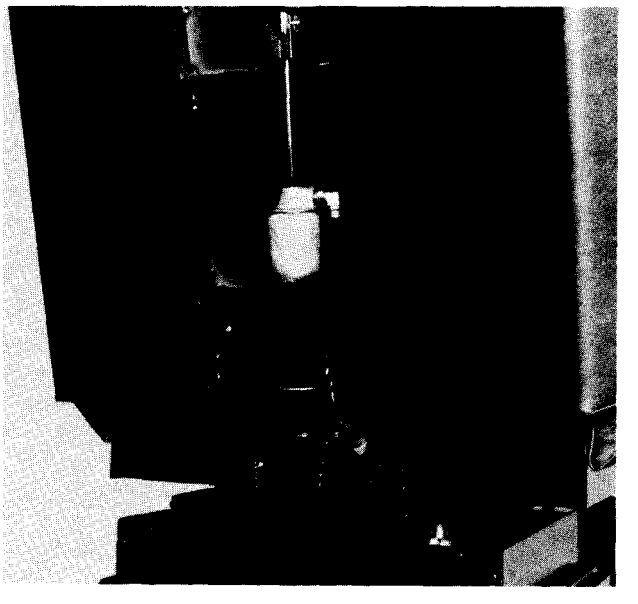


Fig. 15

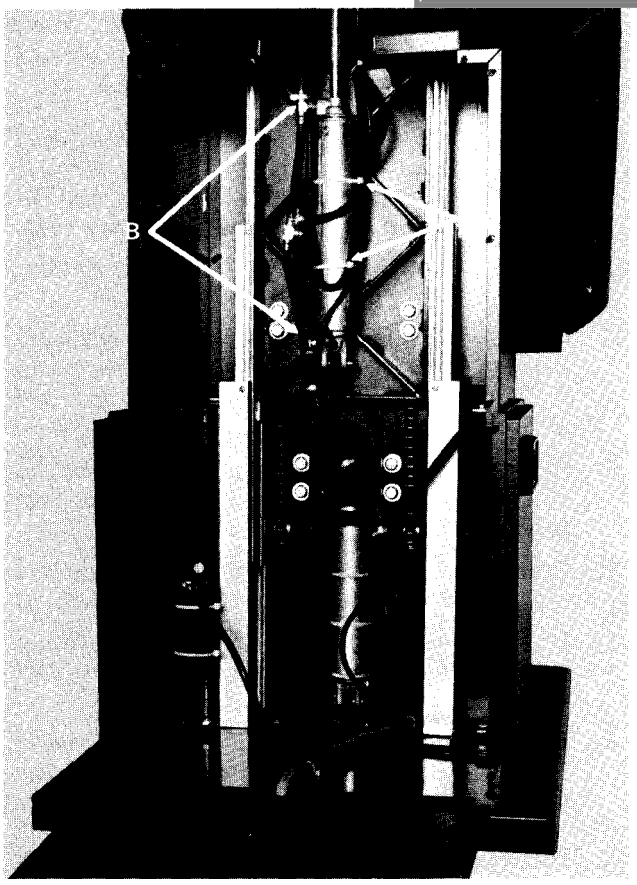


Fig. 16

2) Remove motor cover, front outer shroud (foot end) and front inner shroud (foot end). See Shroud Removal, Page 6.

3) Remove cover on back of back section by removing (4) small screws, (Item A, Fig. 17).

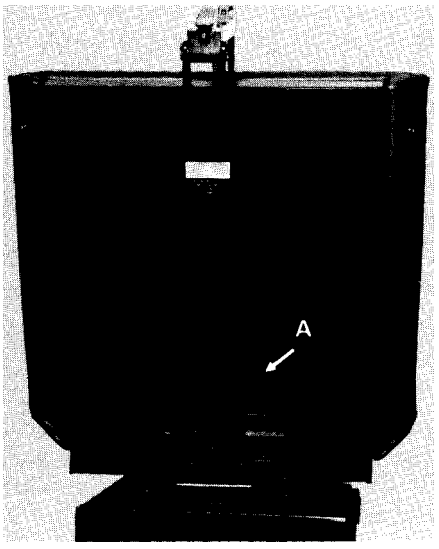


Fig. 17

4) Remove "E" ring and clevis pin from rod end of cylinder. Have an assistant hold the back section against the seat section and let cylinder hang down, (Fig. 18).

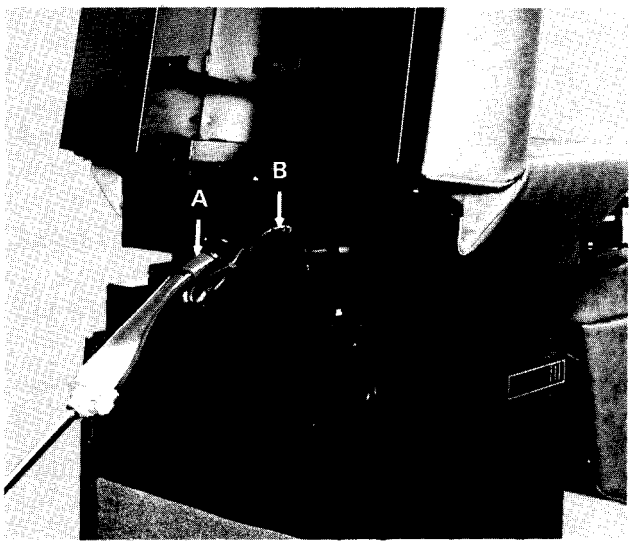


Fig. 18

5) Remove large nylon tie (Item A, Fig. 18) from cylinder. **(NOTE:** Replacement ties are included in cylinder replacement kit.)

6) Unwrap protective plastic covering from hose bundle, (Item B, Fig. 18).

7) Remove hose fittings from cylinder with 1/2" wrench.

8) Cut wire off at least 6" from the defective cylinder. **CAUTION:** Be sure power cord is disconnected from wall outlet.

9) Remove "E" ring and clevis pin from base end of cylinder to remove cylinder from table.

10) Install new cylinder by inserting clevis pin and "E" ring in base end of cylinder.

11) Connect hose fittings tightly to new cylinder and push cord inside slot and lay next to hoses.

12) Install large nylon tie to cylinder, (Item A, Fig. 18).

13) Replace protective plastic covering to hose bundle, (Item B, Fig. 18).

14) Follow defective cylinder cord from cylinder to terminal board at power pack and notice the nylon ties and clamps.

15) Lay new cylinder cord along side of defective cylinder cord and replace ties and clamps while removing defective cylinder cord and replacing new cylinder cord.

NOTE: It is important that all ties and clamps are replaced in exactly the same spot on the hoses, particularly the tie that attaches the spring or damage to the wires and hoses may result in electrical shock or hose leakage. See Figs. 15 & 16.

16) **CAUTION:** Be sure power cord is disconnected from wall outlet. Remove defective cylinder cord from terminal board replacing terminals of new cylinder cord, black for black and white for white.

17) Connect power cord and run back raising cylinder rod all the way out.

18) Connect rod end of cylinder with clevis pin and "E" ring.

19) Run table back all the way down. Table should be level as shown in Fig. 19. If the back section sags down then adjust clevis out. If the back section tilts upward, then adjust clevis in. This is done by using the wrenching flats on the cylinder rod next to the clevis with a 3/8" open end wrench. The rod will turn easiest when it is extended to about half of total extension.

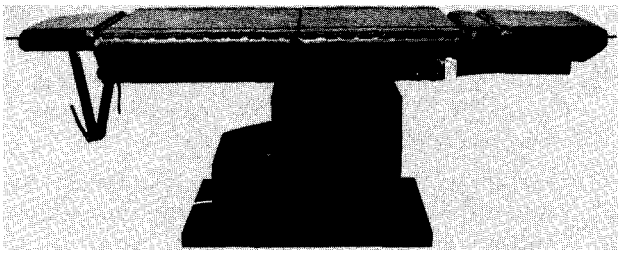


Fig. 19

20) If leakage of hydraulic fluid was excessive, after repair oil must be added to the system. Oil should be added as noted "Adding Oil to System", Page 14.

21) After assembly, check to see that all cords and hoses work freely and are free of obstructions.

22) Replace shrouds, motor cover and back cover. **NOTE:** When replacing motor cover, be sure power cord fits into slot and all wires are inside motor cover.

Procedure for Replacing Tilt Cylinder

1) When changing a cylinder, notice how the wires, hose fittings and nylon ties are positioned so that they may be replaced in exactly the same way or damage to the wires and hoses may result in electrical shock or hose leakage. (See Fig. 16).

2) Remove front outer shroud (foot end), front inner shroud (foot end) and plastic motor cover. See Shroud Removal, Page 6.

3) Remove "E" ring and clevis pin from rod end of defective cylinder. **NOTE:** Place a weight, approximately 50#, on seat section to be sure table top does not flip backwards.

4) Remove large tie straps from tilt cylinder, (Item A, Fig. 16).

5) Remove fittings from defective cylinder with 1/2" wrench. **NOTE:** Nylon ties (Item B, Fig. 16) must not be removed from cord and hose assembly.

6) Remove "E" ring and clevis pin from bottom of defective cylinder to remove cylinder from table.

7) Install new cylinder. Replace clevis pins and "E" rings and connect hose fittings tightly.

8) Follow defective cylinder cord from cylinder to terminal board at power pack and notice the nylon ties and clamps.

9) Lay new cylinder cord along side of defective cylinder cord and replace ties and clamps while removing defective cylinder cord and replacing new cylinder cord. **NOTE:** Replacement ties are included in cylinder replacement kit.

10) **CAUTION:** Be sure power cord is disconnected from wall outlet. Remove defective cylinder cord from terminal board replacing terminals of new cylinder cord, black for black and white for white.

11) Connect power cord and run table tilt all the way down. Table should be level as shown in Fig. 19. If table is not level, the cylinder rod must be adjusted. This is done by using the wrenching flats on the cylinder rod next to the clevis using a 3/8" open end wrench. The rod will turn easiest when it is extended about half of its total extension.

12) If leakage of hydraulic fluid was excessive after repair, oil must be added to the system. Oil should be added as noted. "Adding Oil to System", Page 14.

13) After assembly, check to see that all cords and hoses work freely and are free of obstructions.

14) Replace shrouds and motor cover. **NOTE:** When replacing motor cover be sure power cord fits into slot and all wires are inside motor cover.

Procedure for Replacement of Foot Raising Cylinder:

1) When changing the cylinder, notice how the wires, hose fittings, and nylon ties are positioned so they may be replaced in exactly the same way, (See Figs. 16 and 20).

2) Remove front outer shroud (foot end), front inner shroud (foot end) and plastic motor cover. (See Shroud Removal, Page 6).

3) Raise the table in a full tilt position and remove hose clamp, (Item A, Fig. 20) from under seat section.

4) Remove cotter pin from clevis at rod end of the foot cylinder.

5) Pull clevis pin from rod end of cylinder while holding the footrest frame, let the cylinder hang down and let the footrest frame hang down.

6) Remove "E" ring and clevis pin from bottom of the defective cylinder and let cylinder hang.

7) Install new cylinder. Replace clevis pins and "E" rings and connect hose fittings tightly.

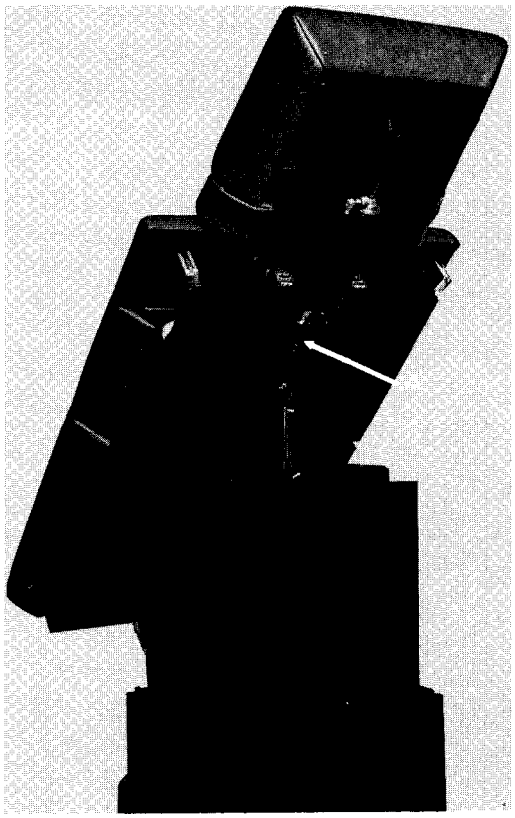


Fig. 20

8) Follow defective cylinder cord from cylinder to terminal board at power pack and notice the nylon ties and clamps.

9) Lay new cylinder cord along side of the defective cylinder cord and replace ties and clamps while removing defective cylinder cord and replacing new cylinder cord.

NOTE: Replacement ties are included in cylinder replacement kit.

NOTE: It is important that all ties and clamps are replaced in exactly the same spot on the hoses, particularly the ties that attach the spring or damage to the wires and hoses may result in electrical shock or hose leakage. (See Figs. 16 and 20).

10) **CAUTION:** Be sure power cord is disconnected from wall outlet. Remove defective cylinder cord from terminal board replacing terminals of new cylinder cord, black for black and white for white.

11) Connect power cord and run foot cylinder all the way up. Table should be level as shown in Fig. 19. If table is not level, the cylinder rod must be adjusted. This is done by using the wrenching flats on the cylinder rod next to the clevis using a 3/8" open end wrench. The rod will turn easiest when it is extended about half of its total extension.

12) If leakage of hydraulic fluid was excessive after repair, oil must be added to the system. Oil should be added as noted "Adding Oil to System", Page 14.

13) After assembly, check to see that all cords and hoses work freely and are free of obstruction.

14) Replace shrouds and motor cover.

NOTE: When replacing motor cover be sure power cord fits into slot and all wires are inside motor cover.

Procedure for Replacement of Base Cylinder

NOTE: Two procedures for replacement of the base cylinder are outlined below. Procedure No. 2 may be used only when base cylinder is in the fully retracted position. (Table down).

Procedure #1

1) Remove plastic motor cover, rear outer shroud (motor end), rear inner shroud (motor end), front inner shroud (foot end) and front outer shroud (foot end). See Shroud Removal, Page 6.

2) Remove "X" brace by removing (4) bolts, (Item A, Fig. 21) with 9/16" wrench.

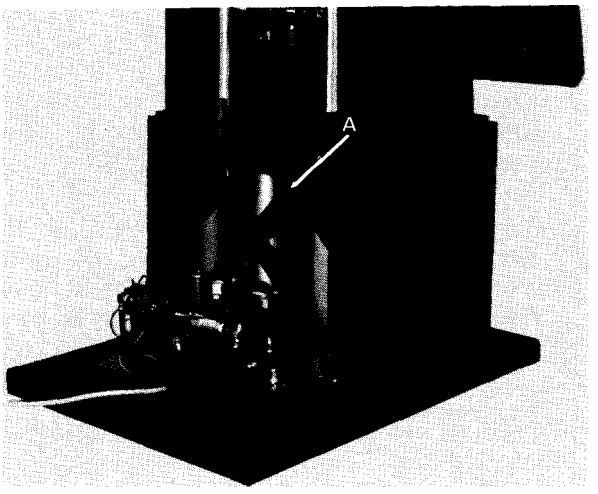


Fig. 21

3) Remove upholstered back and seat sections. See Page 3.

4) With the back raising cylinder extended, remove cover on back of back section by removing (4) small screws, (Item A, Fig. 17).

5) Remove cotter pin from clevis at rod end of foot cylinder.

6) Pull clevis pin from rod end of cylinder while holding the footrest frame. Let the cylinder hang down and let the foot rest frame hang down.

7) Remove wire and hose clamp, (Item A, Fig. 20).

8) Remove "E" ring and clevis pin from rod end of back raising cylinder and let cylinder hang down. Have an assistant hold the back section in a vertical position as shown in Fig. 22.

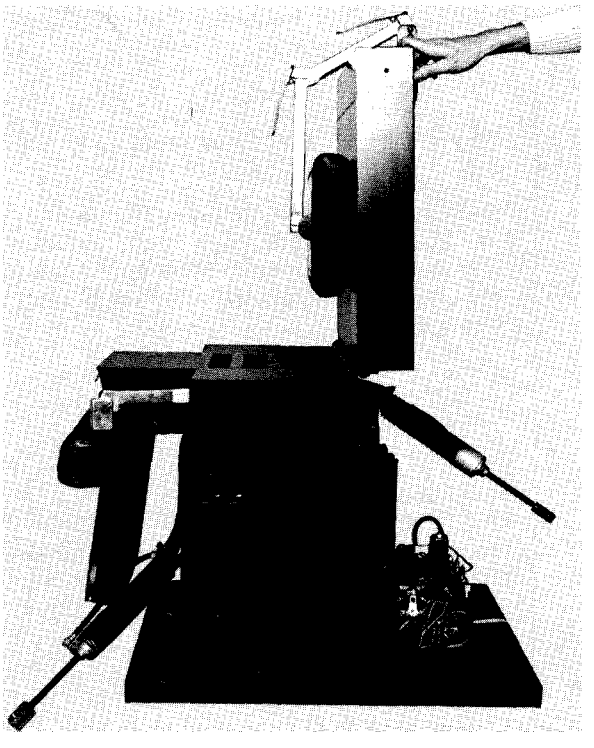


Fig. 22

9) While an assistant is holding the back section in a vertical position, remove the 6 bolts with 7/16" socket wrench (Item A, Fig. 23) from inside the seat section.

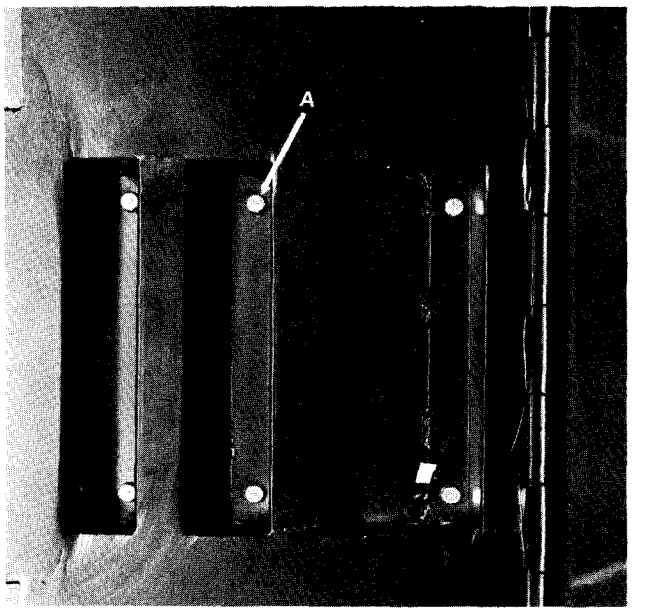


Fig. 23

10) Lower the back section against the seat section, with protection between. (See Fig. 24). With an assistant, remove table top section from base by lifting on points A shown in Fig. 24, one man on each side. Set table top on floor.

Fig. 24

11) Have-an assistant lift on the base sliding member as shown in Fig. 25 so the weight is relieved on the clevis pin and the clevis pin may be removed, then lower the sliding member slowly.

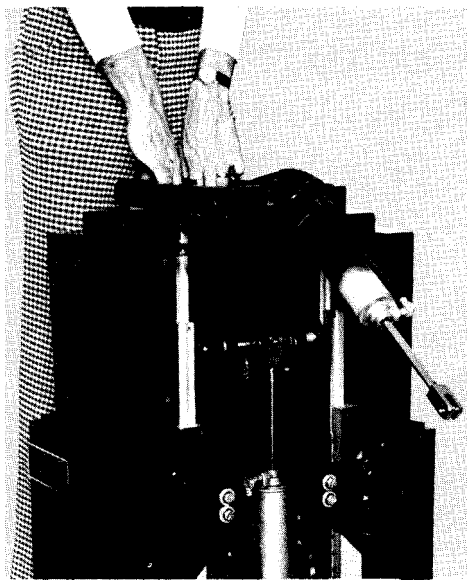


Fig. 25

12) When changing a cylinder, notice how the wires, hose fittings and nylon ties are positioned so they may be replaced in exactly the same way or damage to the wires and hoses may result in electrical shock or hose leakage. (See Fig. 26).

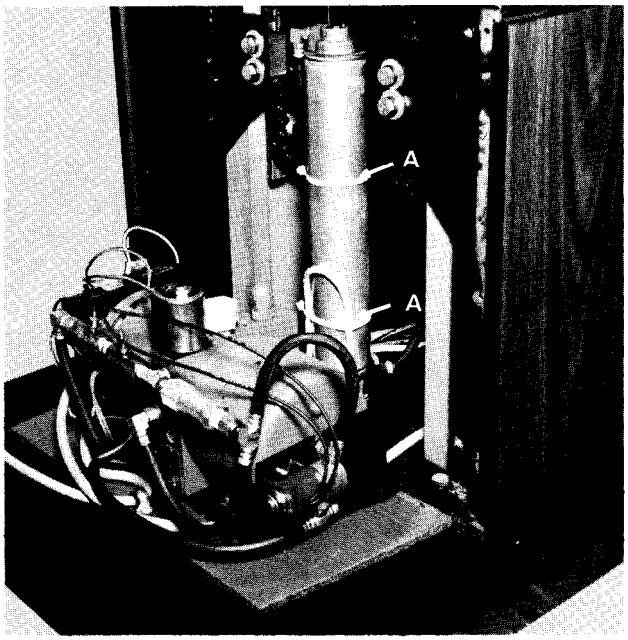


Fig. 26

13) Remove "2" large nylon ties from defective cylinder, (Item A, Fig. 26).

14) Remove hose fittings from defective cylinder with 1/2" wrench.

15) Remove clevis pin from base end of defective cylinder and remove defective cylinder from table.

16) Place in new cylinder and install clevis pin and clip to base of cylinder.

17) Connect hose fittings to new cylinder. Notice the fitting at the base end at approximately 45° upward tilt.

18) **CAUTION:** Be sure power cord is disconnected from wall outlet. Connect cord terminals to terminal board replacing defective cylinder cord white terminal to white terminal and black terminal to black terminal.

19) Have an assistant lift on the sliding member as shown in Fig. 25 enabling the clevis pin (rod end) to be inserted and clip installed.

20) Install large nylon ties to cylinder, 2 places, (Item A, Fig. 26). **NOTE:** Replacement ties are included in cylinder replacement kits.

21) Connect power cord and run base cylinder all the way down and adjust for small space "A" (Fig. 27) above slides (approx. 1/16" - 1/8", **NO MORE).** This is done by using the wrenching flats on the cylinder rod next to the clevis with a 3/8" open end wrench. The rod will turn easiest if the rod is extended slightly.

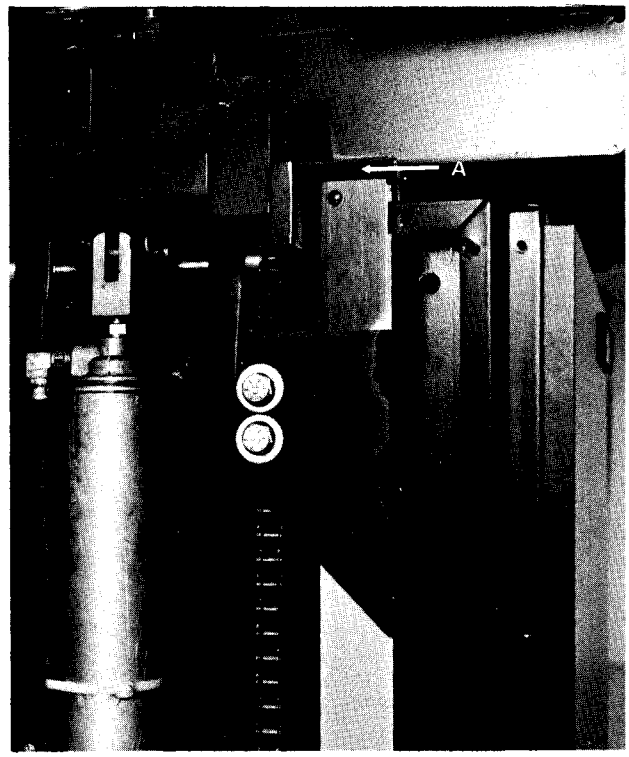


Fig. 27

22) Run cylinder several times and check fittings for leaks.

23) If leakage of hydraulic fluid was excessive after repair, oil must be added to the system. Oil should be added as noted "Adding Oil to System", Page 14.

24) With an assistant, replace table top by lifting on points A shown in Fig. 24 with

back section folded onto seat section as shown in Fig. 24 and place on base section. Be sure hose bundle fits into slot of seat section. While seat section is resting on base section, lift back section up and while holding this up, line up 6 bolt holes and attach (6) 1/4-20 x 5/8" bolts with 7/16" socket wrench.

25) Connect clevis pin and "E" ring to rod end of back raising cylinder.

26) Connect foot cylinder at base with clevis pin and "E" rings, and at rod end with clevis pin and cotter pin.

27) Connect hose clamp to underside of seat section, (Item A, Fig. 20).

28) Replace seat/back section. See Page 3.

29) Replace "X" brace with (4) 3/8" bolts as shown Fig. 21.

30) Replace shrouds and motor cover and back cover. NOTE: When replacing motor cover be sure cord fits into slot and all wires are inside motor cover.

PROCEDURE FOR REPLACING BASE CYLINDER

Procedure #2

NOTE: This procedure may be used only when base cylinder is in the fully retracted position. (Table down).

1) When changing a cylinder, notice how the wires, hose fittings and nylon ties are positioned so they may be replaced in exactly the same way or damage to the wires and hoses may result in electrical shock or hose leakage. See Fig. 26.

2) Remove plastic motor cover, rear outer shroud (motor end), rear inner shroud (motor end), front inner shroud (foot end) and front outer shroud (foot end), See Shroud Removal, Page 6.

3) Remove "X" brace by removing 4 bolts with 9/16" wrench.

4) Remove large nylon ties from defective cylinder.

5) Have an assistant pry up on the sliding member directly under the tilt cylinder to take the weight off the clevis pin rod end so the pin may be removed. See Fig. 28.

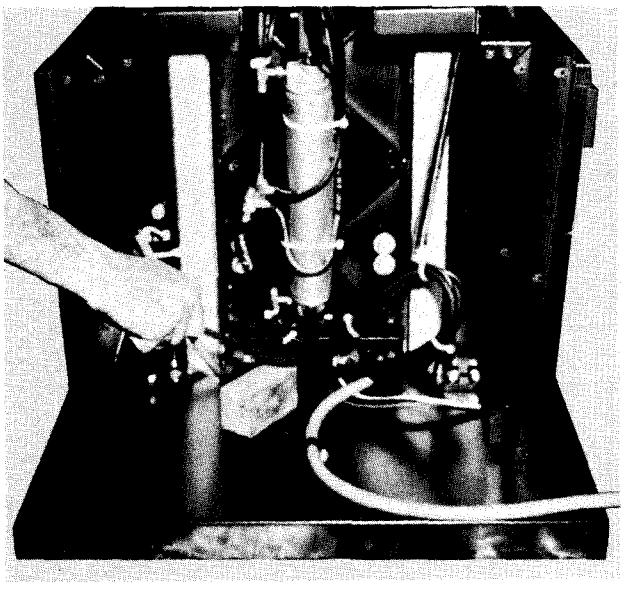


Fig. 28

6) Remove hose fittings from defective cylinder with 1/2" wrench.

7) Remove clevis pin from base end of defective cylinder and remove defective cylinder from table.

8) Place in new cylinder and install clevis pin and clip to base of cylinder.

9) Connect hose fittings to new cylinder. Notice the fitting at base end is approximately 45° upward tilt.

10) CAUTION: Be sure power cord is disconnected from wall outlet. Connect cord terminals to terminal board replacing defective cylinder cord white terminal to white and black terminal to black.

11) Have an assistant pry up on the sliding member directly under the tilt cylinder enabling the clevis pin (rod end) to be inserted and clip installed. See Fig. 28.

12) Install large nylon ties to cylinder, 2 places.

13) Run base cylinder all the way down and adjust for small space "A" Fig. 27 above slides (approximately 1/16" - 1/8" NO MORE). This is done by using the wrenching flats on the cylinder rod next to the clevis with a 3/8" open end wrench. The rod will turn easiest when it is extended about half of total extension.

14) If leakage of hydraulic fluid was excessive after repair, oil must be added to the system. Oil should be added as noted "Adding oil to System" page 14.

15) Reassemble table by reversing steps 2 and 3.

Repair of Oil Leaks

Oil leaks can be caused by defective damaged hose line, hose or pipe fitting, hose fitting, "0" ring or cylinder rod seal. If an oil leak appears in any area, determine exact location of leak. Remove motor cover, rear and front outer and inner shrouds. See Removal of Shrouds, Page 6. Wipe all hoses, fittings and cylinder walls dry, then run motor to determine location of leak.

Leaks at Fittings

1) If leak is located at a pipe fitting, tighten fitting a turn or two. If this does not eliminate the leak, turn the fitting out and use pipe sealer on thread. If thread is damaged, replace the fitting.

2) If leak is located at a hose fitting, tighten fitting securely. If this does not eliminate the leak, replace the "0" ring.

To replace "0" ring, remove the hose fitting from cylinder and use a small screwdriver to pry out the defective "0" ring. Position the new "0" ring and reinstall the hose fitting.

Cylinder Leaks

If a cylinder is leaking, replace the cylinder using proper procedure given on pages 7 thru 13.

Leak at Hose Line

If a hose is leaking, remove the complete hose assembly from the cylinders and pump.

The short hose at the pump is easily replaced by removing all fittings with 1/2" wrench and reinstalling new hose.

To remove either of the long hose assemblies use the following procedure:

1) When changing hose assembly, notice the position of the hose fittings and nylon ties so they may be replaced exactly the same way or damage to the wires and hoses may result in electrical shock or hose leakage. See Clamps, Figs. 15, 16 and 20.

2) Remove cover on back of back section by removing 4 small screws. (Item A, Fig. 17).

3) Remove the protective plastic covering, (Item B, Fig. 18).

4) Put new hose assembly in place along side of damaged hose assembly before removing damaged hose.

5) Remove fittings and nylon ties of damaged hose, one at a time replacing with fittings of new hose and replacing nylon ties. Begin at back raising cylinder, then tilt cylinder, then foot cylinder, then base cylinder and pump. **NOTE:** Replacement ties are included in hose replacement kits.

NOTE: It is important that all ties and clamps are replaced in exactly the same spot on the hoses, particularly the ties that attach to the spring, (See Figs. 15, 16 and 20).

6) Remove damaged hose assembly from table.

7) Be sure all fittings and ties are tightened properly.

8) Replace protective plastic covering near back raising cylinder, (Item B, Fig. 18).

9) Replace cover on back of back section with 4 small screws.

10) Run table up and down several times to purge air out of the system.

If leak was excessive, after repair, oil must be added to the system. Oil should be added as noted "Adding Oil to System", Page 14.

11) Replace shrouds and motor cover. **NOTE:** When replacing motor cover, be sure power cord fits into slot and all wires are inside.

Adding Oil to Hydraulic System

The hydraulic oil used in the Model 111 & 114 power system is a colorless, odorless, non-staining **LIGHT GRADE** of clean mineral oil. This is the same grade mineral oil as is available from any hospital stockroom or pharmacy.

The unit is filled at the factory and should never need refilling unless fluid is lost through an external leak such as a damaged hose line, fitting, or cylinder seal leak. No bleeding or purging of the hydraulic hoses is required. Any air that may reach the cylinder during shipment or during repairs will return to the reservoir after a short period of operation.

The following procedure should be followed when adding oil to the system:

1) Remove plastic motor cover. See Page 6.

2) Remove plastic filler cap from top of the power pack, (Item A, Fig. 29).

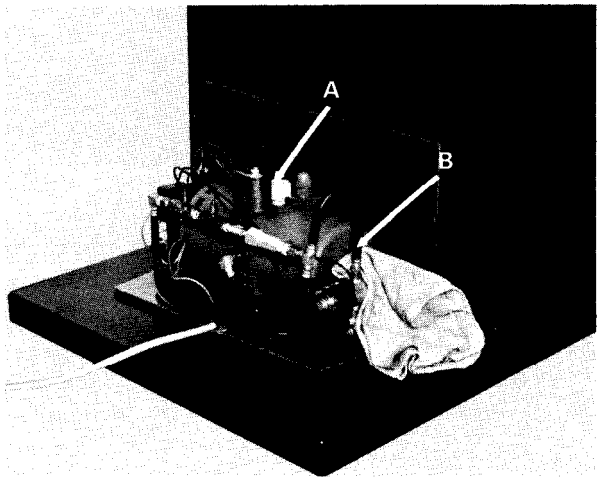


Fig. 29

3) Remove small screw from the end of tank, (Item B, Fig. 29).

4) Place a rag at the end of tank near small screw hole Fig. 29 and fill at filler hole until oil runs out of small screw hole.

NOTE: Use **LIGHT GRADE** mineral oil. Use of **HEAVY GRADE** mineral oil will result in slower operation.

5) Replace small screw in end of tank.

6) Replace plastic filler cap.

7) Replace motor cover. Be sure power cord fits into slot on cover and be sure all wires and hoses are inside cover.

Lift and Stabilizing Chain Adjustment

Excessive sideways play of the table may be due to loose chains. Chain looseness will be noticed only on the lower portion of the chain loop near the idler sprockets. Adjustment may be done as follows:

1) Remove front outer shroud (foot end) and front inner shroud (foot end). See Shroud Removal Page 6.

2) With the table raised all the way up to highest position, loosen the (4) bolts (Item A, Fig. 30) with 9/16" socket wrench.

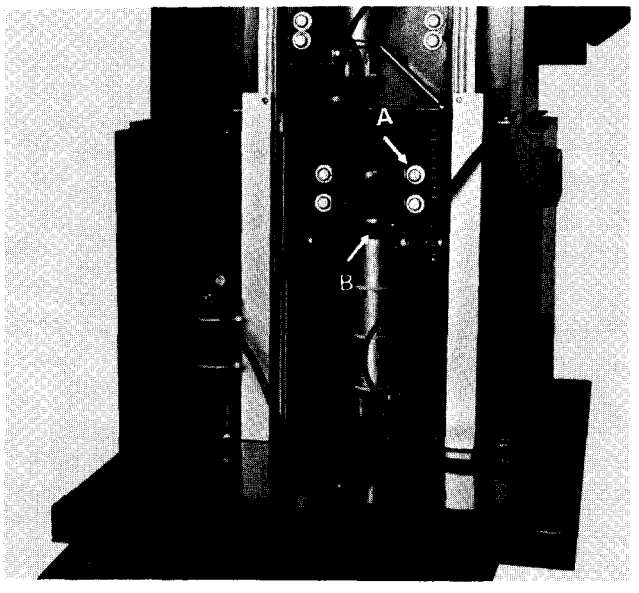


Fig. 30

3) Insert a prybar or large screwdriver in the center of slot, (Item B, Fig. 30).

4) Pry up firmly and while prying up, tighten 4 bolts to hold chain in position. (See Fig. 31). The tension should be equal in both chains. The chain should not be drum tight, but with little spring back.

5) After checking chain for tightness, tighten all 4 bolts securely.

6) Replace front outer shroud and front inner shroud.

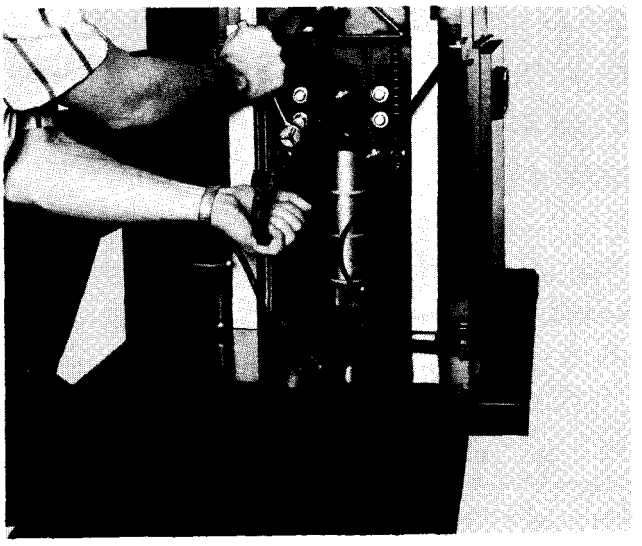


Fig. 31

Replacement or Adjustment of Foot Control Switches

CAUTION: WHEN WORKING ON INTERNAL WIRING OF FOOT CONTROL, BE SURE POWER CORD IS DISENGAGED FROM WALL OUTLET TO AVOID ELECTRICAL SHOCK.

If complete foot control switch must be removed from cord for any reason:

1) Remove wire cover by removing (3) screws, (Item A, Fig. 32).

2) Disconnect cord by disconnecting all wire connectors shown in Fig. 33.

3) Grasp plastic bushing with pliers and while squeezing tab on bushing pull out of hole in foot switch.

Internal switches in foot control can be replaced by:

1) Removing the screw holding the foot pedal cover in place, (Item A, Fig. 34).

2) With this screw removed the foot pedal cover is then slipped off the switch housing.

3) With the pedal cover removed, remove the defective push-button switch by first removing the mounting screws from the switch and then removing the lead wires.

NOTE: Be sure to note position of all leads so new switch is connected properly when installed.

If when the foot pedal is depressed the switch does not actuate, the "stops" (Item B, Fig. 34) must be adjusted down.

1) Loosen lock nut, (Item B, Fig. 32).

2) Turn "stop" with allen wrench while depressing pedal until an audible "click" is heard.

3) Turn stop 1/2 turn after click is heard.

4) Holding stop in position with allen wrench, tighten lock nut securely.

NOTE: Switch may be damaged in operation if stop is turned more than 1/2 turn after click is heard.

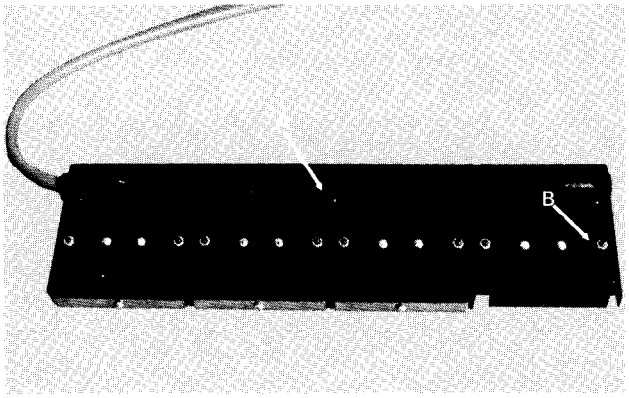


Fig. 32

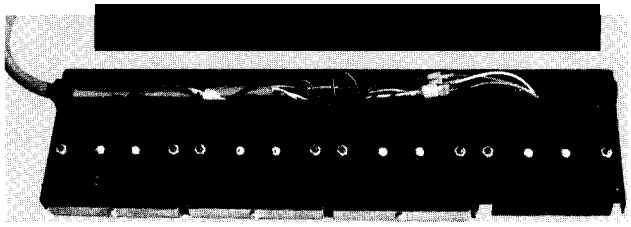


Fig. 33

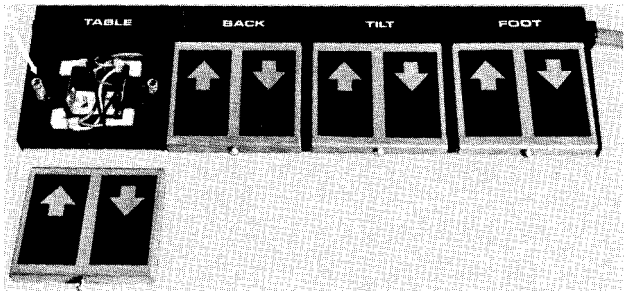


Fig. 34

Procedure for Replacing Motor Capacitor

1) Disengage power cord from wall outlet.

2) Remove front outer shroud (foot end) and front inner shroud (foot end). See Shroud Removal, Page 6.

3) The capacitor is located on the left hand support channel, Fig. 35.

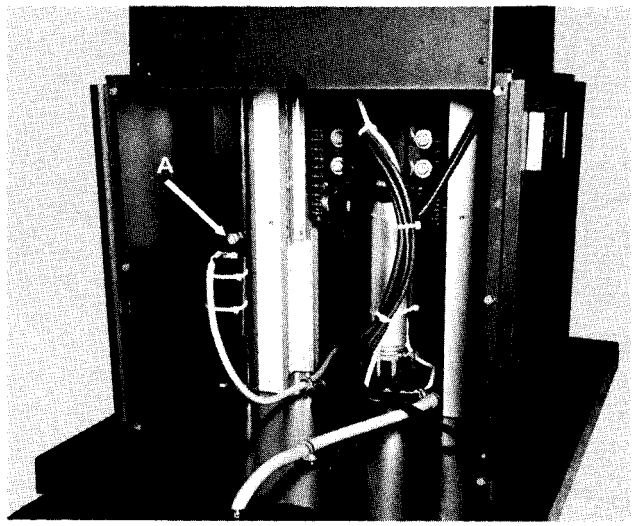


Fig. 35

4) Remove the wires from the capacitor by loosening the screws located on the top.

5) Remove the bolt (Item A, Fig. 35) with 9/16" socket wrench to remove capacitor holder.

6) Remove the capacitor from the holder by pushing out the nylon ties.

7) Replace new capacitor into the holder and nylon ties.

8) Bolt capacitor holder to left hand support channel.

9) Connect wires to capacitor.

10) Replace shrouds.

Removal of Down Solenoid

The solenoid may be removed by removing the nut on top of the valve then pull the solenoid up. The valve body may be removed by turning the large hex until the valve is free then carefully pull up, (See Fig. 36).

Removal of Anticavitation Solenoid

The solenoid may be removed by prying off the small cap on the end of valve with a screwdriver then push the valve stem of the solenoid to free the solenoid. The valve body may be removed by removing the hose fittings, (See Fig. 36).

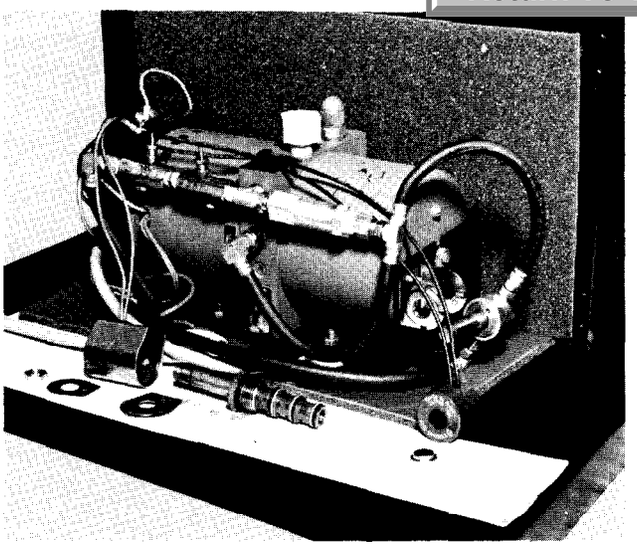


Fig. 36

PARTS LIST

Base Cylinder Kit	002-0001-00
Tilt Cylinder Kit	002-0002-00
Back or Foot Cylinder Kit	002-0003-00
Fitting Kit	002-0007-00
Return Hose Kit (Rod end of cylinders)	002-0012-00
Footswitch Wire Kit	002-0013-00
Power Hose Kit (Base end of cylinders)	002-0014-00
"0" Ring (12 pack)	014-0021-00
Flow Control Valve	014-0033-00
Relief Check Valve	014-0034-00
Motor Pump Tank Ass'y	014-0035-01
Pump Hose	014-0036-00
Solenoid Coil - Down Solenoid Valve	014-0040-00
Valve Body - Down Solenoid Valve	014-0041-00
Anticavitation Valve	014-0044-00
Motor Pump Ass'y Complete with Mounting Bracket and all external hardware As shown Fig. 37 & Fig. 38	014-0055-00
Quart Mineral Oil	014-0056-00
Relay	015-0023-00
Capacitor	015-0024-00
Micro Switch	015-0045-00
Time Delay Relay	015-0061-00
Footswitch Lead Cord	015-0091-00
Complete Footswitch	015-0093-00

Power System Parts Identification

Internal Relief Valve: Regulates the fluid pressure for cylinder extension (up stroke). This is set at the factory for 600 p.s.i. and should **never** be tampered with. (Item A, Fig. 37).

Relief Check Valve: Regulates the fluid pressure for cylinder retraction (down stroke). Fixed at 200 p.s.i. (Item B, Fig. 37).

Adjustable Flow Control: (Down Speed) Regulates the speed of cylinder retraction. Set for 13 seconds base down time, (Item C, Fig. 37).

Adjustable Flow Control: (Up Speed) Regulates the speed of cylinder extension. Set for 13 seconds base up time, (Item D, Fig. 37).

Down Solenoid Valve: Reverses the flow of fluid for cylinder retraction (down stroke), (Item E, Fig. 37).

Anticavitation Solenoid Valve: Locks cylinders against extension when unenergized. Prevents tilt from raising when weight is put on the back section, (Item F, Fig. 37).

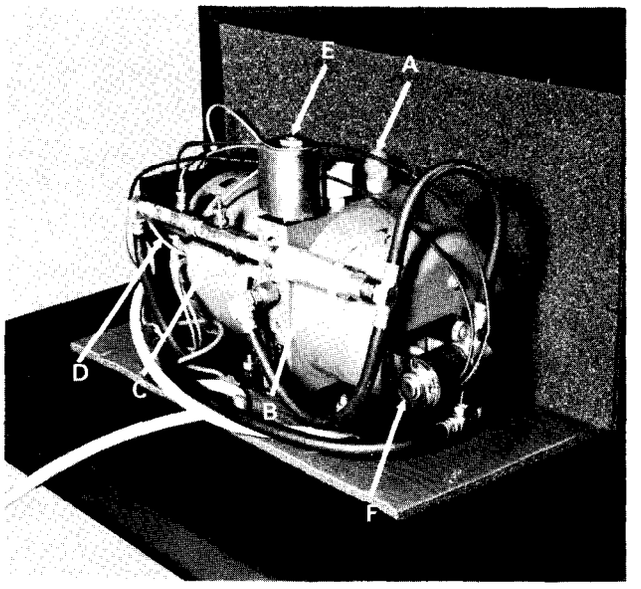


Fig. 37

Time Delay Relay: Delays opening of cylinder solenoids for 1/10 second to avoid momentary drop in up actuations, (Item C, Fig. 38).

Relay: Actuates only for cylinder retraction (down stroke), (Item A, Fig. 38).

Terminal Board: Termination for wires, (Item B, Fig. 38).

Pressure line for cylinder extension and return line for cylinder retraction, (Point D, Fig. 38).

Return line for cylinder extension and pressure line for cylinder retraction, (Point E, Fig. 38).

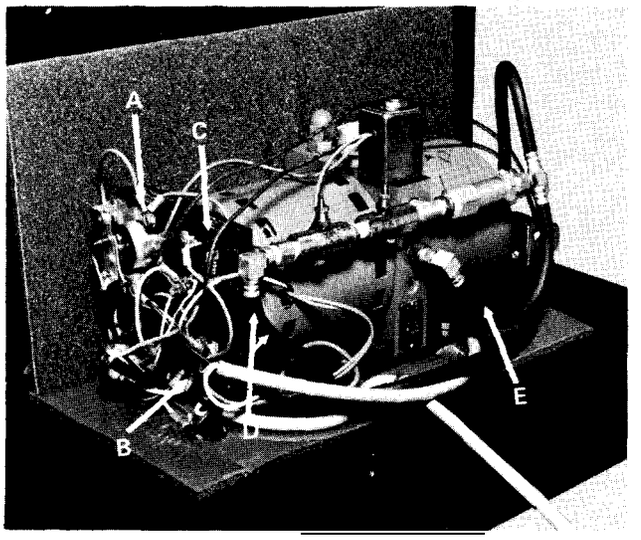


Fig. 38

TROUBLE SHOOTING GUIDE

Many service problems are due to minor problems in the electrical circuits or control switches. Therefore when testing inoperative units, always check switches and electrical wiring first.

A wiring diagram and identification of parts page appears *in* the back of this manual and constant referral to these pages during trouble shooting will be necessary.

Conditions which could cause improper functioning of the power unit are listed below along with diagnosis and repair procedures.

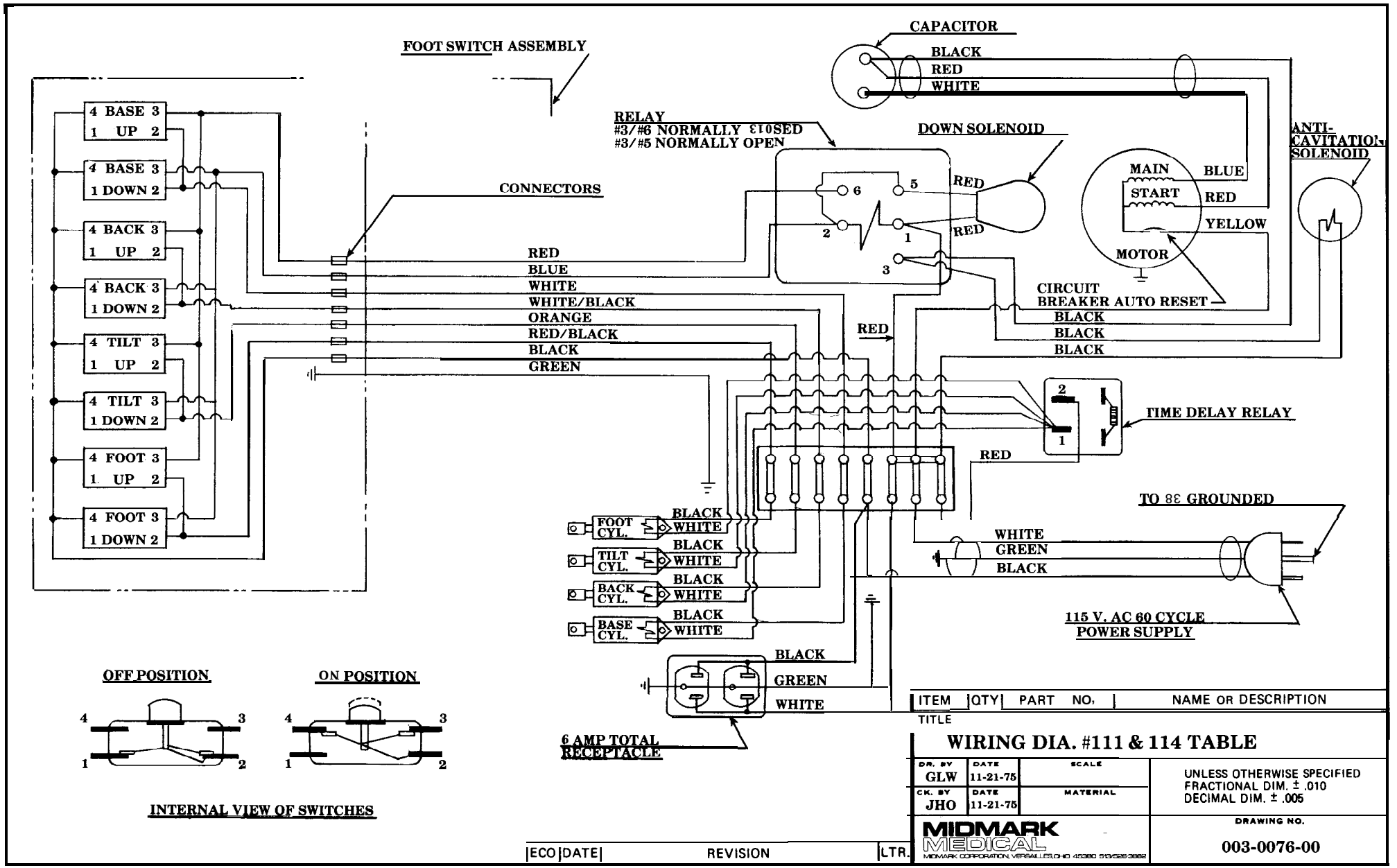
Problem	Symptons	Probable Cause	Check	Correction
When all up and down switches are depressed individually, table will not actuate into any up or down positions.	Motor does not run, no relay actuation, and no cylinder solenoid actuation (audible click).	Unit not plugged into receptacle.	Check	Plug unit into receptacle.
		Blown fuse or faulty receptacle.	Check building fuse - 15 amp. Check receptacle with test lamp.	Replace fuse if necessary. Replace receptacle if necessary.
		Faulty or loose terminal on power cord.	Check power cord with test lamp.	Replace if faulty.
		Black wire of foot switch lead broken or disconnected.	Remove wire cover from underside of footswitch and remove footswitch pedals. See Page 15. Check connectors. Check continuity of Black Wire.	Replace footswitch lead if faulty.
	Motor does not run, but relay and cylinder solenoids actuate (audible click).	Capacitor burned out or loose terminals.	Check terminals.	Replace capacitor. See Page 16.
		Thermal overload in motor switched on.		Allow motor to cool, then recheck.
	Motor does not run, but motor hum is audible. Relay and cylinder solenoids actuate (audible click).	Motor and pump locked. Mechanical bind or defective motor.	Allow motor to cool, then recheck.	Replace motor and pump assembly if defective.
	Motor and all electrical function properly.	Low on hydraulic oil.	Check oil level. See Page	Add oil if necessary. See Page 14.
	Motor and all electrical function properly except no cylinder solenoid actuation.	Defective time delay relay.	Unplug unit from wall receptacle and bypass time delay relay by disconnecting wire from #2 terminal and attaching it to #1 terminal. Check operation, if cylinders now actuate, relay is defective.	Replace time delay relay.
When all up and down switches are depressed individually, the table will not function when base up, tilt up, back up or foot up switch is acutated. Base down, tilt down, back down and foot down functions properly.	Motor runs and cylinder solenoids actuate (audible click).	Down solenoid valve stuck in energized position.	Pressure will be apparent from pump on hoses at only point E, Fig. 38 when both base up or down switch is depressed. Remove solenoid and solenoid valve from pump. See Page 16 and check operation with alternate power supply. Spool inside valve body should shift when energized.	Replace solenoid valve body if faulty. See Page 16.

Problem	Symptoms	Probable Cause	Check	Correction
Continued)	(Continued)	Anticavitation solenoid valve solenoid burned out.	Pressure will be apparent from pump on hoses at point D, Fig. 38 when base up is depressed. Check magnetism at point F, Fig. 37. Should be slight magnetism on cap when energized.	Replace solenoid if faulty. See Page 16.
	Motor does not run (up actuations only) but cylinder solenoids actuate (audible click).	Red wire of footswitch lead broken or disconnected.	Remove wire cover from underside of footswitch and remove footswitch pedals. See **Page 15.** Check connectors. Check continuity of red wire.	Replace footswitch lead if faulty.
		Relay stuck in energized position.	Unplug unit from wall receptacle and move contactor of relay, if stuck on #5 contact break away.	File contacts with emery file or replace if faulty.
When all switches are depressed individually, table will not function when base down, tilt down, head down or foot down switch is depressed. Base up, tilt up, head up, and foot up function switch is depressed. properly.	Motor runs, relay actuates and cylinder solenoids actuate (audible click). Pressure will be apparent from pump at point D, Fig. 38 when both down or up function switch is depressed.	Down solenoid burned out.	Check for magnetism at point E, Fig. 37 with base down switch depressed.	Replace solenoid if defective. See Page 16.
		Down solenoid valve stuck	If solenoid has magnetism when energized, but problem still exists remove solenoid and solenoid valve from pump. See Page 16 and check operation with alternate power supply. Spool inside valve body should shift when solenoid is energized.	Replace solenoid valve body if defective. See Page 16.
	Same as above but pressure will be apparent at point E, Fig. 38 for base down and at point D, Fig. 38 for base up.	Adjustable flow control may be closed.	Loosen lock nut, turn screw counter clockwise and recheck.	Set down time for base at 12 seconds.
	Motor does not run (down actuations only). Relay does not actuate but cylinder solenoids actuate (audible click).	Blue wire of footswitch lead broken or disconnected.	Remove wire cover from underside of footswitch and remove footswitch pedals. See Page 15. Check connector. Check continuity.	Replace footswitch lead if no continuity.
		Relay stuck in unenergized position.	Unplug unit from wall receptacle and move contactor of relay if stuck on #6 contact, break away.	File contacts with emery file or replacerelay if faulty.
		Relay solenoid burned out.	Remove relay and check with alternate power supply.	Replace if faulty.

Return To Table Of Contents

Problem	Symptoms	Probable Cause	Check	Correction
When all switches are depressed individually, base up and base down does not function. All other actions function.	Motor runs but base cylinder solenoid does not actuate (no audible click).	White wire from footswitch lead is broken or disconnected.	Remove wire cover from underside of footswitch and remove "base" footswitch pedal. See Page 15. Check connector and check continuity of white wire.	Replace footswitch lead if faulty.
		Cylinder solenoid burned out.	If above checks O.K.	Replace base cylinder. See Page 10.
Base up functions but not base down or base down functions but not base up. All other actions function.	Motor does not run and no base solenoid actuation (no audible click).	Footswitch out of adjustment.	See Page 15.	Adjust if necessary.
	Motor may or may not run and cylinder solenoid may or may not actuate.	Defective micro switch in footswitch control.	Check continuity of micro switch in on and off positions see Page 15 and wiring diagram.	Replace micro switch if continuity does not conform to wiring diagram.
When all switches are depressed individually, tilt up and tilt down does not function. All other actions function.	Motor runs but tilt cylinder solenoid does not actuate (no audible click).	Orange wire from footswitch lead is broken or disconnected.	Remove wire cover from underside of footswitch and remove "tilt" footswitch pedal. See Page 15. Check connector and check continuity of orange wire.	Replace footswitch lead if faulty.
		Cylinder solenoid burned out.	If above checks O.K.	Replace tilt cylinder. See Page 9.
Tilt up functions but not tilt down or tilt down functions but not tilt up. All other actions function.	Motor does not run and no tilt solenoid actuation (no audible click).	Footswitch out of adjustment.	See Page 15.	Adjust if necessary.
	Motor may or may not run and cylinder solenoid may or may not actuate.	Defective micro switch in footswitch control.	Check continuity of micro switch in on and off positions. Seepage 15 and wiring diagram.	Replace micro switch if continuity does not conform to wiring diagram.
When all switches are depressed individually, back up and back down does not function. All other actions function.	Motor runs but head cylinder solenoid does not actuate (no audible click).	White with black stripe wire from footswitch lead is broken or disconnected.	Remove wire cover from underside of footswitch and remove "back" footswitch pedal. See Page 15. Check connector and check continuity of white with black stripe wire.	Replace footswitch lead if faulty.
		Cylinder solenoid burned out.	If above checks O.K.	Replace back cylinder. See Page 7.
Back up functions but not back down or back down functions but not back up. All other actions function.	Motor does not run and no head solenoid actuation. (no audible click).	Footswitch out of adjustment.	See Page 15.	Adjust if necessary.
	Motor may or may not run and cylinder solenoid may or may not actuate.	Defective micro switch in footswitch control.	Check continuity of micro switch in on and off positions. Seepage 15 and Wiring Diagram.	Replace micro switch if continuity does not conform to wiring diagram.

Problem	Symptoms	Probable Cause	Check	Correction
When all switches are depressed individually, foot up and foot down does not function. All other actions function.	Motor runs but foot cylinder solenoid does not actuate (no audible click).	Red with black stripe wire from footswitch lead is broken or disconnected.	Remove wire cover from underside of footswitch and "foot" footswitch pedal. See Page 15. Check connector and check continuity of red with black stripe wire.	Replace footswitch lead if faulty.
		Cylinder solenoid burned out.	If above checks O.K.	Replace foot cylinder. See Page 9.
Foot up functions but not foot down or foot down functions but not foot up. All other actions function.	Motor does not run and no foot solenoid actuation. (no audible click).	Footswitch out of adjustment.	See Page 15.	Adjust if necessary.
	Motor may or may not run and cylinder solenoid may or may not actuate.	Defective micro switch in footswitch control.	Check continuity of micro switch in on and off positions. See Page 15 and Wiring Diagram.	Replace micro switch if continuity does not conform to wiring diagram.
Either base, tilt, back or foot cylinder will not hold position. May drift down slowly.	Motor and all electrical functions properly.	Faulty micro switch in footswitch control. May be holding cylinder solenoid in energized position.	Check for current with test lamp at cylinder terminal with switch in off position. Check both UP and down micro switches. See Page 15 and see wiring diagram.	If there is current at cylinder terminal with switch in off position, replace micro switch.
		Dirt particle in cylinder solenoid valve or faulty cylinder solenoid.	Flush dirt particle to reservoir by running cylinder in and out about 10 times if this does not help, a replacement cylinder will be needed.	Replace cylinder. See Pages 7 thru 13.
Back may be lifted or tilt may drift up with weight on the back section.		Defective anticavitation solenoid valve.	Lift on back section, if it raises with hand pressure, anticavitation valve is defective.	Replace anticavitationvalve body. See Page 16.
Excessive sideways play of table base.		Loose stabilizing chains.	Check chains for tightness.	Tighten chains. See Page 15.



ITEM	QTY	PART NO.	NAME OR DESCRIPTION

TITLE

WIRING DIA. #111 & 114 TABLE

DR. BY	DATE	SCALE
GLW	11-21-75	
CK. BY	DATE	MATERIAL
JHO	11-21-75	

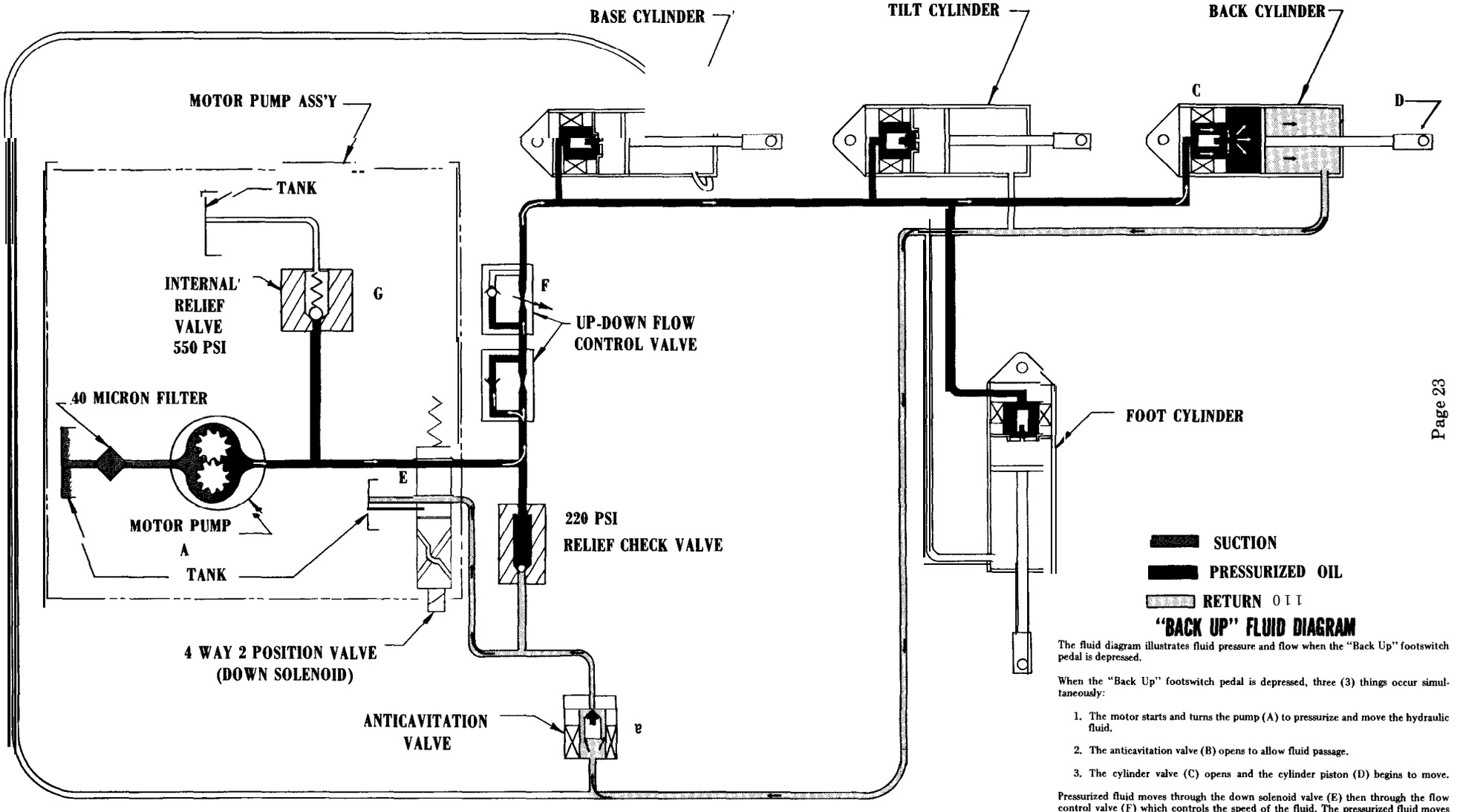
UNLESS OTHERWISE SPECIFIED
FRACTIONAL DIM. ± .010
DECIMAL DIM. ± .005

MIDMARK MEDICAL
MIDMARK CORPORATION, VERSAILLES, OHIO 45380 513/526-3662

DRAWING NO.
003-0076-00

ECO	DATE	REVISION	LTR.

Return To Table Of Contents



"BACK UP" FLUID DIAGRAM

The fluid diagram illustrates fluid pressure and flow when the "Back Up" footswitch pedal is depressed.

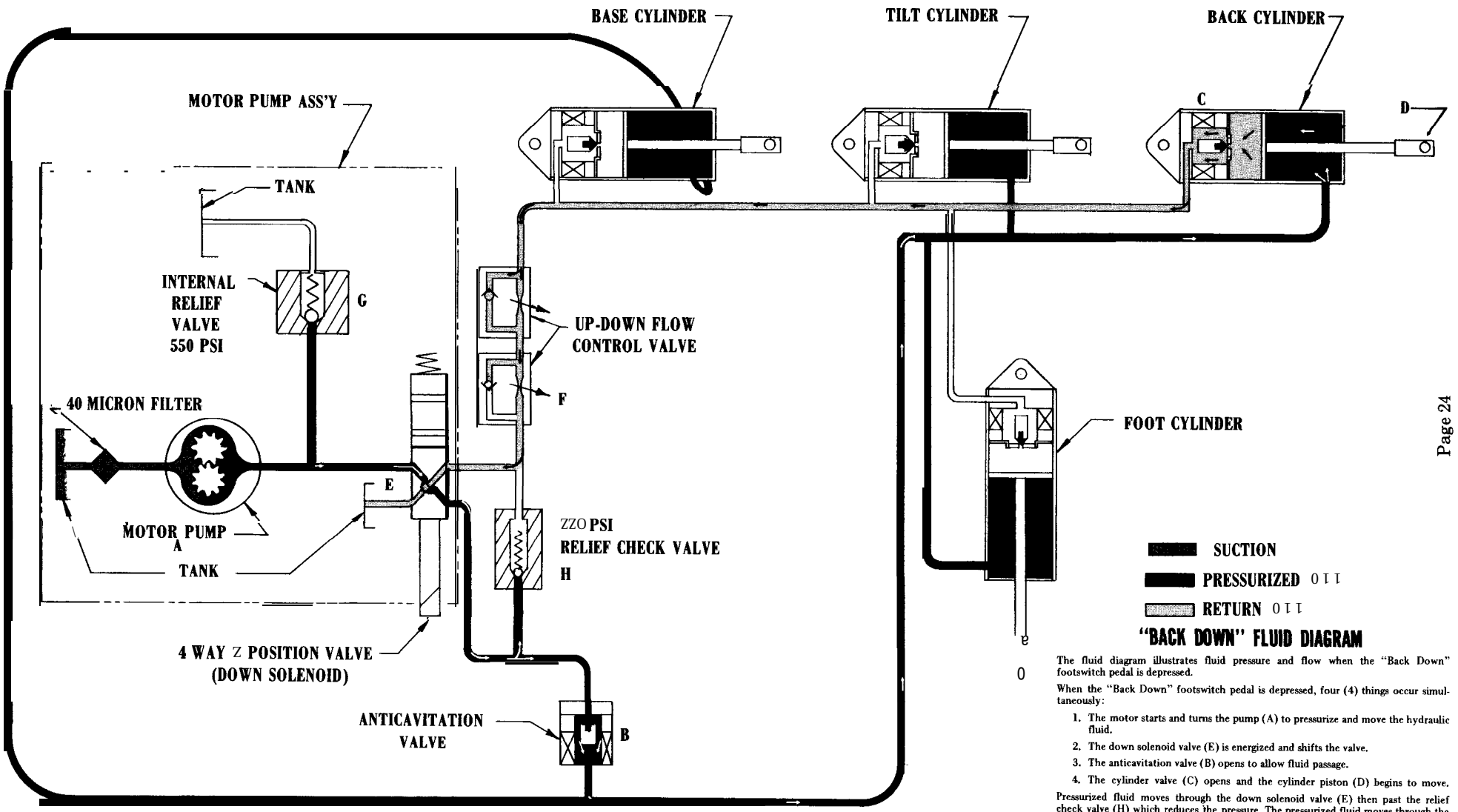
When the "Back Up" footswitch pedal is depressed, three (3) things occur simultaneously:

1. The motor starts and turns the pump (A) to pressurize and move the hydraulic fluid.
2. The anticavitation valve (B) opens to allow fluid passage.
3. The cylinder valve (C) opens and the cylinder piston (D) begins to move.

Pressurized fluid moves through the down solenoid valve (E) then through the flow control valve (F) which controls the speed of the fluid. The pressurized fluid moves through the cylinder valve (C) and pushes the piston (D) up. The fluid on the other *side (rod end) of the piston moves out of the cylinder through the anticavitation* valve (B) and through the down solenoid valve (E) to the tank.

When the piston reaches the end of its stroke, the piston stops and the pressurized oil "dump offs" through the internal relief valve (G).

Return To Table Of Contents



"BACK DOWN" FLUID DIAGRAM

The fluid diagram illustrates fluid pressure and flow when the "Back Down" footswitch pedal is depressed.

When the "Back Down" footswitch pedal is depressed, four (4) things occur simultaneously:

1. The motor starts and turns the pump (A) to pressurize and move the hydraulic fluid.
2. The down solenoid valve (E) is energized and shifts the valve.
3. The anticavitation valve (B) opens to allow fluid passage.
4. The cylinder valve (C) opens and the cylinder piston (D) begins to move.

Pressurized fluid moves through the down solenoid valve (E) then past the relief check valve (H) which reduces the pressure. The pressurized fluid moves through the anticavitation valve (B) then into the rod end of the cylinder and pushes the piston (D) down. The fluid on the bottom end of the piston moves out through the cylinder valve (C) and through the flow control valve (F) which controls the speed of the fluid. The fluid then goes through the down solenoid valve (E) and into the tank.

When the piston reaches the end of its stroke, the piston stops and the pressurized fluid "dumps off" through the internal relief valve (G).

Return To Table Of Contents

114 Repair Parts List		
Part Number	**Description**	**Serial No. Range**
Upholstery		
None Available	None Available	None Available
Panels		
None Available	None Available	None Available
Hydraulic		
002-0001-00	Base Cylinder	All
002-0002-00	Tilt Cylinder	All
002-0003-00	Back / Foot Cyl	All
002-0012-00	Return Hose	Prior to 37420
002-0021-00	Return Hose	37420 & up / L1000 - 1139
002-0014-00	Power Hose	All five diget and L1000-1139
002-0031-00	Pump Hose	Prior to 37420
002-0032-00	Pump Hose	37420 & up / L1000 - 1139
002-0117-00	Pump Hose	L1139 & Up
002-0118-00	Return Hose (Pump to Base)	L1139 & Up
002-0119-00	Power Hose (Pump to Base)	L1139 & Up
002-0120-00	Return Hose (Base Cylinder)	L1139 & Up
002-0121-00	Power Hose (Base to Tilt)	L1139 & Up
002-0122-00	Return Hose (Base to Tilt)	L1139 & Up
002-0123-00	Power Hose (Tilt to Foot)	L1139 & Up
002-0124-00	Return Hose (Tilt to Foot)	L1139 & Up
002-0125-00	Power Hose (Tilt to Back)	L1139 & Up
002-0126-00	Return Hosse (Tilt to Back)	L1139 & Up
002-0178-00	Return Hose (Tilt to Back	L1139 & Up
002-0036-00	Down Solenoid Valve Coil	Prior to 37420
002-0037-00	Down Solenoid Valve Coil	37420 & up / L1000 - 1139
002-0038-00	Anticavitation Valve	All
014-0056-00	Mineral Oil	
002-0034-00	Motor Pump (Obsolete)	Prior to 37420
002-0035-00	Motor Pump (Obsolete)	37420 & up / L1000 - 1139
002-0127-00	Motor Pump	L1139 - 1985
002-0133-00	Motor Pump	L1985 - present
014-0168-00	Shuttle Valve	L1050 - present
014-0169-00	Shaft Seal - Motor Pump	All MTE Pumps

Return To Table Of Contents

Electrical		
002-0041-00	Time Delay Relay	All
	GLIM (Obsolete)	
002-0040-00	Power Cord	All
002-0043-00	Capacitor 64-77 MFP	
002-0044-00	Capacitor 124-149 MFP	
002-0310-00	Capacitor Retrofit Kit	
002-0045-00	Foot Control Switch	All
002-0048-00	Footswitch Cord	All
015-0424-00	Auto Return Switch-Green	
015-0376-00	Auto Return Switch - Red	
015-0381-00	Return Limit Switch	L1228-1342
015-0421-00	Return Limit Switch	L1342 - present
015-0374-00	Auto Return Relay	
Miscellaneous		
029-1487-01	Headlock Assembly (Black)	All
016-0082-00	Mechanical Lock (Foot)	All

Return To Table Of Contents

COMMENTS

The Technical Publications Department of Midmark Corporation takes pride in its publications. We are sure that our manuals will fill all of your needs when you are performing scheduled maintenance, servicing, or repairs on a Midmark product.

However, if you find any errors or feel that there should be a change, addition, or deletion to a manual, please let us know!

Page(s) and Paragraph(s) Needing Changed:

Description of Error or Desired Change:

Please fax or mail a copy of this completed comment sheet to:

Midmark Corporation
ATTN: Technical Publications Department
60 Vista Drive
Versailles, Ohio 45380
Fax: (937) 526-5542

© Midmark Corporation 2000 SF-1621

Printed in U.S.A.

Return To Table Of Contents

FAX ORDERING FORM

(SERVICE PARTS ONLY)

NOTES:

- **ALL BLOCKED AREAS MUST BE COMPLETED.**
- **USE FOR NON-WARRANTY FAX ORDERS ONLY. WARRANTY ORDERS MUST BE TELEPHONED IN (1-800-MIDMARK).**

ATTENTION: SERVICE DEPARTMENT FAX#: 877-249-1793

ACCT #: _____ **P.O. #:** _____ **DATE:** _____

NAME: _____ **SHIP TO:** _____

ADDRESS: _____

CITY, ST.: _____

CONTACT: _____

PHONE: _____

☐ **NON-EMERGENCY ORDER - TO SHIP WITHIN 72 HOURS IF PART(S) IN STOCK.**

☐ **EMERGENCY ORDER - TO SHIP WITHIN 24 HOURS IF PART(S) IN STOCK (IF ORDER IS RECEIVED BEFORE 1:30 P.M. E.S.T).**

SEND NOTIFICATION IF PARTS ARE NOT AVAILABLE TO SHIP WITHIN 24 HOURS VIA E-MAIL OR FAX TO: _____

METHOD OF SHIPMENT **OTHER** _____

UPS	FED EX
☐ NEXT DAY A.M.	☐ NEXT DAY A.M.
☐ NEXT DAY P.M.	☐ NEXT DAY P.M.
☐ 2ND DAY	☐ 2ND DAY
☐ GROUND	☐ ECONOMY

QTY.	PART #	DESCRIPTION (SPECIFY COLOR OF ITEM IF APPLICABLE)	COLOR CODE	PRICE/PER

Return To Table Of Contents

Return To Table Of Contents

Midmark Corporation
60 Vista Drive
P.O. Box 286
Versailles, Ohio 45380-0286
937-526-3662
Fax 937-526-5542
midmark.com

Because we care.

Subject To Change Without Notice

© Midmark Corporation - 2003

Printed in U.S.A.